

REMARKS

The Office Action mailed March 14, 2007 has been reviewed and the comments of the Patent and Trademark Office have been considered. Claims 19-30 were pending in the application. Claims 27-30 has been amended. A detailed listing of all claims that are, or were, in the application, irrespective of whether the claim(s) remain under examination in the application, are presented, with an appropriate defined status identifier.

Specification

The specification has been amended to include information pertaining to continuing data regarding the application.

Claim Rejections

Claims 27-30 and 8 are rejected under 35 U.S.C. § 101 because the claimed invention is directed towards non-statutory subject matter.

With regards to claim 8, it is respectfully submitted that there is no pending claim 8 in this application. The inclusion of claim 8 in this rejection will be taken as a typographical error. Further clarification is respectfully requested.

Claims 27-30 have been amended to address this issue. Thus, reconsideration and withdrawal of this rejection is respectfully requested.

Prior Art Rejections

In the Office Action, claims 19-30 are rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent 6,373,408 to Kimura (hereinafter “Kimura”). Applicant respectfully traverses this rejection for at least the following reasons.

The instant invention relates to an encoder and decoder device and a method for encoding and decoding binary and multivalue symbols. Claims 19, 23 and 27 recite an apparatus, method and program for decoding binary arithmetic code comprising “a buffer for accumulating said binary symbols that have been decoded” and “a second data decoder for, based on said binary symbols that have been decoded, decoding data that are necessary for stream grammar analysis and updating said probability estimate values”. Claims 20, 24 and

28 recite an apparatus, method and program for decoding arithmetic code comprising “a buffer for accumulating said binary symbols that have been decoded” and “a second data decoder for, based on said multivalued symbols that have been decoded, decoding data that are necessary for stream grammar analysis and updating said probability estimate values”. Claims 21, 25 and 29 recite an apparatus, method and program for encoding binary arithmetic code “a buffer for accumulating said binary symbols” and “a bit number estimation unit for estimating the relation between the number of multivalued symbols and the number of code bits from the number of multivalued symbols that have been extracted by said arithmetic encoder and the number of code bits that have been generated, and for estimating the number of code bits that are generated after arithmetic encoding from the amount of accumulation of said buffer”. Claims 22, 26 and 30 recite an apparatus, method and program for encoding arithmetic code “a buffer for accumulating said multivalued symbols” and “a bit number estimation unit for estimating the relation between the number of multivalued symbols and the number of code bits from the number of multivalued symbols that have been extracted by said arithmetic encoder and the number of code bits that have been generated, and for estimating the number of code bits that are generated after arithmetic encoding from the amount of accumulation of said buffer”.

Kimura is directed towards an encoding and decoding apparatus and method. With respect to claims 19, 23 and 27, Kimura fails to teach or disclose an apparatus, method or program for decoding binary arithmetic code comprising “a buffer for accumulating said binary symbols that have been decoded” and “a second data decoder for, based on said binary symbols that have been decoded, decoding data that are necessary for stream grammar analysis and updating said probability estimate values”. With regard to the buffer recited in the claims, the Office Action refers to buffer 51 disclosed in Kimura. However, buffer 51 holds undetermined code having probability of carry-over, rather than binary symbols that have been decoded. (Column 3, lines 19-23; column 4, lines 32-35). Further, as seen in the cited sections, this buffer is utilized during encoding, not decoding. There is no teaching or suggestion in Kimura that buffer 51 accumulated binary symbols that have been decoded.

With regard to the second data decoder, there is no suggestion in Kimura of such a decoder that decodes data necessary for stream grammar analysis and updating of the probability estimate values. Stream grammar analysis does not even appear in the disclosure

of Kimura, let alone a second decoder that decodes data necessary for such an analysis. With regard to a second decoder, the Office Action refers to a “decoder that updates the effective region by truncating one of equally divided upper and lower partial regions of the effective region which does not include a code value of the carry bound detected.” (Column 13, lines 36-39). However, it is respectfully submitted that truncation based upon the presence of a code value is not equivalent or similar to stream grammar analysis, or a “a second data decoder for, based on said binary symbols that have been decoded, decoding data that are necessary for stream grammar analysis and updating said probability estimate values”. There is no indication in Kimura of decoding data necessary for a certain purpose (stream grammar analysis) and updating probability estimate values. Thus, if this rejection is maintained, the examiner is respectfully requested to point out where these features are disclosed in Kimura.

Claims 20, 24 and 28 recite similar limitations, and thus are also considered to be novel with respect to Kimura and prior art for the reasons cited above. If this rejection is maintained, the examiner is respectfully requested to point out where those features of claims 20, 24 and 28 are disclosed in Kimura.

Claims 21, 25 and 29 recite an apparatus, method and program for encoding binary arithmetic code “a buffer for accumulating said binary symbols” and “a bit number estimation unit for estimating the relation between the number of multivalued symbols and the number of code bits from the number of multivalued symbols that have been extracted by said arithmetic encoder and the number of code bits that have been generated, and for estimating the number of code bits that are generated after arithmetic encoding from the amount of accumulation of said buffer”. Kimura teaches a probability estimation table that outputs a decoding parameter specified by the learning data, as well as an ability to estimate time delay in outputting a code. (column 12, lines 50-67) However, there is no teaching or disclosure in Kimura of a buffer that hold binary symbols, and that is utilized for estimating the number of code bits that are generated after arithmetic encoding. Kimura also teaches “eliminating the overflow of the counter storing the code length of the code” (column 12, lines 42-43), but again this is in no way equivalent or even similar to estimating the number of code bits generated after arithmetic encoding. Thus, if this rejection is maintained, the examiner is respectfully requested to point out where these features are disclosed in Kimura.

Claims 21, 26 and 30 recite similar limitations, and thus are also considered to be novel with respect to Kimura and prior art for the reasons cited above. If this rejection is maintained, the examiner is respectfully requested to point out where those features of claims 21, 26 and 30 are disclosed in Kimura.

The dependent claims are also patentable for at least the same reasons as the independent claims on which they ultimately depend. In addition, they recite additional patentable features when considered as a whole. As mentioned above, Applicant believes that the present application is now in condition for allowance. Favorable reconsideration of the application as amended is respectfully requested.

Conclusion

In view of the foregoing amendments and remarks, applicant believes that the application is now in condition for allowance. An indication of the same is respectfully requested. If there are any questions regarding the application, the examiner is invited to contact the undersigned attorney at the local telephone number below.

The Commissioner is hereby authorized to charge any additional fees which may be required regarding this application under 37 C.F.R. §§ 1.16-1.17, or credit any overpayment, to Deposit Account No. 19-0741. Should no proper payment be enclosed herewith, as by a check or credit card payment form being in the wrong amount, unsigned, post-dated, otherwise improper or informal or even entirely missing, the Commissioner is authorized to charge the unpaid amount to Deposit Account No. 19-0741. If any extensions of time are needed for timely acceptance of papers submitted herewith, Applicant hereby petitions for such extension under 37 C.F.R. §1.136 and authorizes payment of any such extensions fees to Deposit Account No. 19-0741.

Respectfully submitted,

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